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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/609,151	07/29/2003	Kondapuram Vijaya Raghavan	KMS-2-CON	7694
22827	7590	01/19/2005	EXAMINER	
DORITY & MANNING, P.A. POST OFFICE BOX 1449 GREENVILLE, SC 29602-1449			HABTE, KAHSAY	
			ART UNIT	PAPER NUMBER
			1624	

DATE MAILED: 01/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/609,151	RAGHAVAN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Kahsay Habte, Ph. D.	1624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 30-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 30-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |                                                                                                                                                 |                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                                                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                            | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/27/2004</u> . | 6) <input type="checkbox"/> Other: _____                                                |

**DETAILED ACTION**

1. Claims 30-35 are pending.

***Continued Examination Under 37 CFR 1.114***

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/27/2004 has been entered.

***Response to Amendment***

3. Applicant's amendment filed 12/27/2004 in response to the previous Office Action (06/22/2004) is acknowledged. The obviousness rejections (items 3 and 4) and the claim objection (item 5) have been maintained.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gale et al. (US 6,262,257). The cited reference on column 7 (lines 36–38) teaches the generic synthesis of any sized bridge structure, in which two substituents attached to a meso carbon are coupled. Specifically, on column 35 (lines 18-30) it has been disclosed the synthesis of tetraspirocyclohexylcalix[4]pyrrole. Applicants claim cycloheptyl (n=3) and cyclooctyl (n=4). Since cited reference teach the generic synthesis of a bridged structure and specifically a tetraspirocyclohexylcalix[4]pyrrole, in which two substituents attached to a meso carbon, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to synthesize any size of ring. Therefore, a 103(a) rejection is proper.

### ***Response to arguments***

Applicants' arguments filed 12/27/2004 have been fully considered but they are not persuasive.

Applicants argue the obviousness rejection under 35 U.S.C. 103(a) (Paper No. 8, paragraph 5) that Gale *et al.* does not disclose the synthesis of tetraspiro cyclooctyl calix (4) pyrroles, tetraspiro cycloheptyl calix (4) pyrroles, or tetraspiro (2-methylcyclohexyl) calix (4) pyrroles, as is found in claims 30-33 of the present application. Applicants also argue: "The suggestion to make the modification and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. In addition, a reference must be considered in its entirety, i.e. as a whole, including portions that would lead away from the claimed invention. W.L. Gore &

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Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. Denied, 469 U.S. 851 (1984). The examiner disagrees with applicants. This is not a 102(b) rejection, but an obviousness rejection under 35 U.S.C. 103(a). Since Gale et al. discloses the synthesis of tetraspirocyclohexyl calix[4]pyrroles on column 35 (lines 18-30), it would have been obvious to one skilled in the art at the time of the invention to synthesize a homologous sized ring.

Applicants also argue:

"Gale, et al., teaches certain calix[4]pyrroles that can be utilized in the field of separation technology. In particular, the separation technology of Gale, et al. is based on noncovalent interactions to provide efficient and effective separation of difficult-to-separate anions and molecules (col.1, ll.18-29). In addition, the reference teaches that part of the difficulty in recognition and separation of compounds, and in particular neutral compounds, is that these molecules have few functionalized sites available for hydrogen bonding, and they lack the large hydrocarbon surfaces necessary to participate in efficient a-a stacking. At column 5, beginning at line 20, the reference provides further description of the separation abilities of the disclosed materials. Specifically, the reference teaches that the affinity a macrocycle has for a particular species can be "tuned" by strategic choice of electron-donating or electron-withdrawing peripheral substituents for synthesis of the macrocycle."

The examiner disagrees with applicants. Whether or not the reference teaches particular species that can be tuned by strategic choice of electron-donating or electron-

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withdrawing peripheral substituents of the macrocycle, has nothing to do in differentiating the prior art compound from applicant's compounds because substituents do not distinguish claims from prior art. On page 7 in the remarks section, applicants also argue that Gale et al. intend "only certain meso-substituted calix[4]pyrroles...is not intended to encompass any and all meso-substituted calix[4]pyrroles", but the examiner disagrees with applicants. The intention of Gale to make certain meso-substituted calix[4]pyrroles has nothing to do with the obviousness rejection. What is important is that Gale et al. teaches on column 35 (lines 18-30) the synthesis of tetraspirocyclohexylcalix[4]pyrrole and thus, it is obvious to one of ordinary skill in the art to synthesize larger rings by simply adding on  $-CH_2-$  groups into the ring to make tetraspirocycloheptylcalix[4]pyrrole and tetraspirocyclooctylcalix[4]pyrrole compounds.

Applicants further argue the obviousness rejection by indicating specific columns of the disclosure (Gale et al.), in which the functional groups (ester, acid) and their derivatization is detailed. Applicant's argument is not persuasive, since the presence or absence of the functional groups is not relevant obviousness rejection. Note that there is nothing in the Gale's reference that show tetraspirocycloheptylcalix[4]pyrrole and tetraspirocyclooctylcalix[4]pyrrole can not be made. There is no disclosure of any difficulty of making tetraspirocycloheptylcalix[4]pyrrole and tetraspirocyclooctylcalix[4]pyrrole, because of the functional groups or their derivatization.

Note that claims 30-33 are drawn to compound claims (i.e. product claims to tetraspirocycloheptylcalix[4]pyrrole and tetraspirocyclooctylcalix[4]pyrrole), but not a

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process of making said compounds. Applicant's arguments failed to persuade the Examiner that it is not obvious to make tetraspirocycloheptylcalix[4]pyrrole and tetraspirocyclooctylcalix[4]pyrrole.

Since a compound is a compound, no matter what process limitation was put into the claim. See *In re Thorpe* 227 USPQ 964 (CCPA 1985), *In re Pilkington* 162 USPQ 145 (CCPA 1969), and *In re Brown and Saffer* 173 USPQ 685 (CCPA 1972). Applicant's argument to overcome the obviousness rejection is not persuasive and, thus, the obviousness rejection under 103(a) is maintained. Difference in a method of manufacturing is relevant to process of making claims, not compound claims.

5. Claims 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gale et al. (US 6,262,257). Cited reference on column 7 (lines 36 –42) teaches the generic synthesis of a bridged structure, in which two substituents attached to a meso carbon are coupled. Specifically, on column 35 (lines 18-30) it has been disclosed the synthesis of tetraspirocyclohexylcalix[4]pyrrole. Applicants claim tetraspiro (2-methyl cyclohexyl) calix[4]pyrroles. The only difference between the prior art and the cited reference is the absence of a methyl substituent from the prior art. Compounds that differ only by the presence or absence of an extra methyl group or two are homologues. Homologues are of such close structural similarity that the disclosure of a compound renders *prima facie* obvious its homologue. The homologue is expected to be preparable by the same method and to have generally the same properties. This expectation is then deemed the motivation for preparing homologues. Of course, these presumptions are rebuttable by the showing of unexpected effects, but initially, the homologues are obvious even in the absence of a specific teaching to add or remove

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methyl groups. See *In re Wood*, 199 USPQ 137; *In re Hoke*, 195 USPQ 148; *In re Lohr*, 137 USPQ 548; *In re Magerlein*, 202 USPQ 473; *In re Wiechert*, 152 USPQ 249; *Ex parte Henkel*, 130 USPQ 474; *In re Fauque*, 121 USPQ 425; *In re Druey*, 138 USPQ 39. In all of these cases, the close structural similarity between two compounds differing by one or two methyl groups was itself sufficient show obviousness. See also MPEP 2144.09, second paragraph.

### ***Response to arguments***

Applicants' arguments filed 12/27/2004 has been fully considered but it is not persuasive.

Applicants argue that a *prima case* of obviousness was not presented. Applicants assert that there should be some suggestion or motivation to one of ordinary skill in the art to modify the reference or a reasonable expectation that the modification will be successful. Applicants argue the rejection: "claims 34-35 are directed to materials that include the methyl groups only in the 2-position of the cyclohexyl ring. This particular position has been found by the inventors to show the desired effect, wherein materials including the substituents methyl groups having as an alternative location the C<sub>3</sub>, C<sub>4</sub>, C<sub>5</sub>, or C<sub>6</sub> location did not exhibit the desired effect and hence are not claimed in the invention." The examiner disagrees with applicants. This is not a position isomer issue (e.g. 2-methylcyclohexyl vs. 3-methylcyclohexyl), but a homologue issue (i.e. presence or absence of an extra methyl group). The desired effect of 2-methylcyclohexyl could be a relevant argument as unexpected result for position isomer case, but not for the homologue issue. Applicants have to compare 2-



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methylcyclohexyl with unsubstituted cyclohexyl (i.e. methyl vs. hydrogen) and not between 2-methylcyclohexyl and 3-, 4-, 5-, or 6-methylcyclohexyl as noted by applicants. Replacing hydrogen by methyl is fairly simple method in Organic Chemistry. One skilled in the art would not find alkylating a cyclohexylcalix(4)pyrroles as an inventive step. For example, chemists have known Friedel-Crafts alkylation process for years. Of course, plenty of ways can be utilized to alkylate the cyclo ring on calix(4) pyrroles. Or alternatively, one can use a starting material with methyl at 2-position already present to achieve the same goal.

Applicants did not rebut the homology (i.e. the presence or absence of an extra methyl group or two are homologues and are expected to be preparable by the same method and to have generally the same properties) nor did they present convincing argument why one is not motivated to replace hydrogen by methyl.

Close structural similarity cases cited all lacked specific teaching, but all indicated lack of patentable distinction between compounds with and without a methyl group. Note also *In re Jones*, 21 USPQ2d 1942, which states at 1943 "Particular types or categories of structural similarity without more, have, in past cases, given rise to *prima facie* obviousness"; one of those listed is "adjacent homologues and structural isomers".

### ***Claim Objection***

6. Claims 30-35 are objected because claim 31 duplicates claim 30, claim 33 duplicates claim 32 and claim 35 duplicates claim 34. For example, claim 31 describes

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claim 30 in great detail but it is the same compound as claim 30. The NMR data and HR-MS data do not narrow down the limitation of claim 30. It is obvious that any cycloheptyl calix (4) pyrrole would have the same NMR and HR-MS data.

### ***Response to arguments***

Applicant's argument filed 12/27/2004 has been fully considered but it is not persuasive.

Applicants requests that "the objection be withdrawn as the test as to whether a claim is proper dependent claim is that it shall include every limitation of the claim from which it depends or, in other words, that it shall not conceivably be infringed by anything which would also infringe the basic claim. A dependent claim does not lack compliance with .....simply because there is a question as to the significance of the further limitation added by the dependent claim or whether the further limitation in fact changes the scope of the dependent claim from that of the claim from which it depends." The examiner disagrees with this argument. Claim 31 duplicates claim 30, since it is the same compound but described in great detail. The same is true for claim 33 and 32 and claims 35 and 34. The NMR data for the products of claims 30, 32 and 34 are an inherent character of the compounds. Note that a benzene compound (C<sub>6</sub>H<sub>6</sub>) recited in claim 1 is a duplicate of claim 2 if claim 2 recite "A benzene compound recited in claim 1 with 6 carbons and 6 hydrogens" or claim 3 is a duplicate of claim 1, if claim 3 recite "A benzene compound in claim 1 that has three double bonds". Claims 2-3 are duplicates

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of claim 1, since they are describing claim 1 in great detail. One skilled in the art would not find claims 2-3 as claim limitations that further narrow down the scope of claim 1.

All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

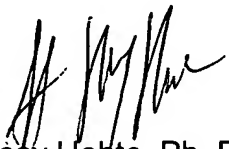
**Conclusion**


7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kahsay Habte, Ph. D. whose telephone number is (571) 272-0667. The examiner can normally be reached on M-F (9.00AM- 5:30PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mukund Shah can be reached on (571) 272-0674, if there is no reply within 24 hours, James Wilson (Acting SPE) can be reached at (571) 272-0661. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1235.

  
Kahsay Habte, Ph. D.  
Examiner  
Art Unit 1624

  
Mark L. Berch  
Primary Examiner  
Art Unit 1624